

GENERAL INFORMATION

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NOVEMBER 1957

SOIL CONSERVATION

Soil Conservation Service • U. S. Department of Agriculture

SOIL CONSERVATION.

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U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

★ THIS MONTH ★

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TOM DALE, Editor

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OUR SOIL • OUR STRENGTH

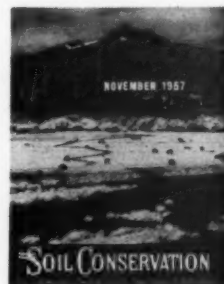
CONSERVATION NEEDS INVENTORY.
—The policy and procedure for making a national inventory of soil- and water-conservation needs has been agreed to by an interagency committee of the Department of Agriculture, and field work on the inventory is expected to start soon. The goal for completion of the inventory is set as 1960 by the committee.

The inventory will encompass two main phases: (1) an inventory of land use, conservation problems, and acreage needing treatment, and (2) an inventory of watershed project needs as authorized by P.L. 566.

SCS will assume leadership in making the inventory but will be assisted by seven other Departmental agencies and expects to receive cooperation of State and local agencies as well as some Federal agencies in other Departments.

This inventory will be broader in scope and more specific in detail than any other ever attempted before. The primary purpose is to provide accurate information to all Departmental agencies engaged in soil- and water-conservation work. The inventory should also provide valuable information to soil conservation districts, State conservation agencies, watershed associations, and others concerned with conservation work.

Basic facts about land use and soils will come from soil surveys on sample areas to supplement data from the more than 500 million acres of surveys already made. Experiences from small watershed projects underway will serve as a guide in making the watershed conservation needs inventory.



FRONT COVER.—Feeder cattle and horses on a mountain meadow in Oregon.

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Note:—This is the 25th anniversary of the Soil Conservation Service.

All photographs are by the Wildlife Service.

A Bright Outlook For Wildlife

By A. E. BORELL

WE have more kinds and greater numbers of game birds, game mammals, furbearers, and game fish in the United States today than were present when white men first set foot on American soil. And our soil- and water-conservation programs should continue to maintain, and even to expand, our fish and wildlife populations and the hunting, fishing, and other recreation that goes with them.

Some people question such optimism. We frequently hear that Man and his activities have seriously depleted our game and fish. We also hear that "Hunting and fishing ain't what they used to be; I have hung up my rod and gun." Even some wildlife administrators tell us that drainage, cultivation, livestock grazing, water control, weed sprays, timber cutting, and modern farming methods are wiping out our game and fish. They would lead us to believe that wildlife is going downhill rapidly and soon will be a thing of the past.

This picture of gloom is not new. Back in 1883, Frances Francis, an English writer, said, "They always tell you things used to be better than they are now, and that something or other is ruining them." Francis was speaking about fishermen. How much basis is there for this kind of anguish and propaganda?

Certainly there have been changes in species and shifts in populations. The passenger pigeon, heath hen, and bison are gone—in their stead we have pheasants, chuckars, Hungarian partridge, and a tremendous population of deer. While many streams and natural lakes have deteriorated and some species of fish have declined, let us not forget that we now have thousands of acres of manmade ponds, lakes, and reservoirs that provide fishing. Many of

these are in areas where little or no fishing existed 100, 50, or even 10 years ago.

Recently, I attended a meeting presided over by one of our top game administrators. At that meeting there were indications that Utah, Colorado, Montana, and Wyoming are competing in their efforts to attract out-of-state hunters to help harvest their overpopulations of deer, and in some cases, elk and antelope. We hear reports of overpopulations of deer in Pennsylvania, Wisconsin, Michigan, Texas, West Virginia, California, Arizona, and a few other States. By overpopulation, I mean not merely more deer than the range will carry, but actually more deer than the hunters want to harvest.

Last year, Colorado had the most liberal deer hunting season in the history of the State. This year the license fee will be lower and the bag limit will be even larger. For \$12.50, the Colorado resident this year will be able to take 4 deer in large sections of the State. Few hunters or families want more than 1 or 2 deer, but they can have 4 if they want them.

In 1955, I attended a technical session of the Western Association of Game and Fish com-



Pintail ducks at Roach's Run, Va.

Note:—The author is biologist, Soil Conservation Service, Denver, Colo. This article is based on a talk given at the annual convention of the Isaac Walton League, Golden, Colo., June 1957.

All photographs used with this article were furnished by the Fish and Wildlife Service.

missioners dealing with upland game birds. In that session, several game technicians discussed the subject of "How to Get Adequate Harvest of Pheasants, Sharptail, and Blue Grouse"—in other words, "how can we get the hunters to check overpopulation?"

Last year (1956), the legal hunting season on sharptail grouse in North Dakota was more liberal than in many years. Colorado and New Mexico had larger quail populations and longer hunting seasons than for many years.

In the publication, *New Mexico Wildlife* for June 1957, Levon Lee, chief of game management for the New Mexico department wrote, "New Mexico's . . . antelope, elk, mountain sheep, javelina, turkey, and . . . deer continue to increase."

In the June 1957, issue of *Field and Stream*, Conservation Editor, Harold Titus reported that "West Virginia game officials are complaining that their Sleepy Creek State Forest, although it is only 80 miles from Washington, D. C., doesn't attract enough hunters to keep the deerherd within bounds or to make a dent in the population of turkey, grouse, and squirrels. The State is even offering to show hunters the way around the area. . ."

In the June 8, 1957, *Newsletter* of the Colorado Game and Fish Dept., Dean Coleman, fur manager, is quoted as saying, "Colorado's population of furbearing animals is holding up well

with some species, such as raccoons and foxes, increasing a bit too rapidly."

Note that these statement report conditions in 1957, not 1857.

Another indication of the abundance of hunting is the fact that in many States we pay bounties or hire hunters to kill pumas, wolves, coyotes, foxes, and badgers. If we were really short of hunting, we would have these animals on our game list instead of on the vermin list. All of them offer excellent sport for the hunter and his dogs.

The spread of native game species to new ranges, especially raccoon, foxes, tree squirrels, and deer on the Plains is notable. Today there are sizable populations of these animals on the Plains in areas where 50 years ago there were few or none. In many cases, this spread is due almost solely to the planting of windbreaks and shelterbelts in areas where no trees previously existed.

Even waterfowl—that wildlife resource which, according to some "prophets of doom," is being destroyed by drainage—has been on the upgrade for several years.

These conditions don't indicate that lumbering, farming, and grazing are wiping out our big game, upland game birds, furbearers, or waterfowl.

In regard to warm-water fish, almost every publication we pick up tells us that our warm-



Wild tom turkeys strutting on a wildlife refuge in Oklahoma.

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Deer in the Black Hills region of South Dakota.

water fish populations are being underharvested. This is often true even of trout in water more than a mile from a road. Nevertheless, new reservoir construction, as well as developments in the control of rough fishes and the rehabilitation of lakes and reservoirs, will further increase our warm-water fish and trout producing opportunities.

Furthermore, largely through assistance from the Department of Agriculture, hundreds of thousands of farm and ranch ponds have been constructed during the past 20 years. Many of these ponds are now providing fish for warm-water species and for trout. These small ponds can be fertilized and managed for high production. More research on stocking and managing of farm fishponds, and more technical assistance to farmers on fishpond construction and management problems can increase this fishing resource by perhaps tenfold—maybe more.

Why are most species of fish and wildlife holding their own or increasing in the face of drainage, grazing, lumbering, water control, and intensive farming activities? Among the many reasons are:

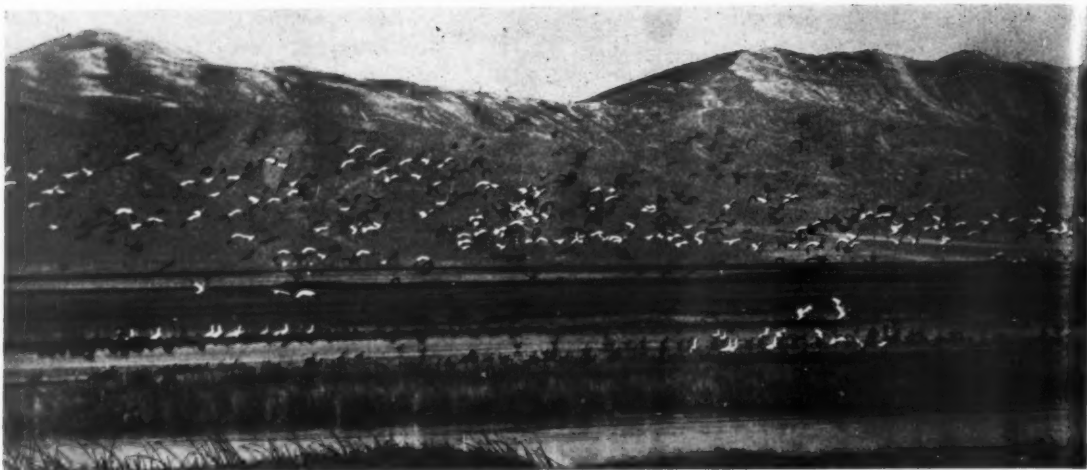
1. The cutting of dense stands of timber permitted the growth of grasses, forbs, and shrubs. This increased the carrying capacity for deer, elk, grouse, furbearers, and many others.
2. Heavy grazing of some rangelands by domestic stock favored forbs and

shrubs over the grasses. As a result, the carrying capacity for deer, elk, antelope, quail, and rabbits, has gone up.

3. The construction by farmers and ranchers of thousands of reservoirs, lakes, ponds, ditches, and windmills has put water on millions of acres where previously water was the limiting factor for wildlife. Bureau of Sport Fisheries and Wildlife surveys show that in Montana there are about 111,000 ponds, and in South Dakota, roughly 107,000 manmade ponds. In Colorado, over 14,000 ponds have been constructed in the past 20 years. In the United States, over 800,000 ponds have been constructed in soil conservation districts since 1937. These manmade ponds provide water for big game, furbearers, upland game birds, and, in addition to providing drinking water and resting places for migrating waterfowl, many of them produce one or more broods of ducks each year.
4. Soil conservation districts and the Department of Agriculture have sponsored conservation practices such as strip cropping, contour cultivation, proper irrigation, crop rotations, stubble mulching, grassed waterways, improved pastures, range management, farm and ranch ponds, windbreaks, and other erosion-control measures. These practices have slowed erosion, increased



Canada geese on a pond near Horicon, Wis.



Lesser snow geese and Canada geese on Bear River Migratory Bird Refuge, Utah.

the quality and quantity of plant growth, and thus the ability of millions of acres to support more people and more wildlife.

5. Wheat, corn, milo, rice, pasture grasses and legumes, and other farm crops produce high quality wildlife foods in quantities far beyond that produced by the original grasslands, forests, and deserts. Thousands of mallards now winter in Colorado. I am certain that few ducks wintered there before farmers planted winter food in the form of grain crops. It is obvious that pheasants could not have lived in most of the United States prior to the planting of agricultural crops.
6. It is true that large areas of land were cleared and thus many acres of wildlife cover were destroyed. In their place, though, we have thousands of miles of fence rows, windbreaks, shelterbelts, ditchbanks, drainage canal banks, roadsides, grassed waterways, and terraces that provide cover and travel lanes for upland game. Although in many areas there is a smaller total acreage of cover today than 50 years ago, there is more food for many species and far better distribution of cover, in relation to food and water, and, thus a higher carrying capacity for most kinds of wildlife.

There are now over 2,750 soil conservation districts in the United States. In these districts more than 3,000,000 acres of trees have been planted; more than 26,000,000 acres of pasture and range have been seeded; more than 3,000,000 acres have had wildlife practices applied and more than 800,000 ponds have been built. In addition to these conservation practices that have secondary wildlife values, during the past year the Department of Agriculture designated three specific wildlife practices as eligible for cost sharing when applied on Conservation Reserve lands.

The people of the United States and of the world are learning more about the wise use of land and water. I am confident that 10, 50, and 100 years from now, the ability of the land and water, of the United States and of the world, to support people and wildlife will be greater than it is today, and that our populations of fish and wildlife also will be greater.

MORE TIMBER IN NORTH CAROLINA.—The sawtimber supply in North Carolina is better now than it was 17 years ago, and current growth—even in large pine sawtimber—is more than sufficient to replace timber cut, according to a recent survey of the Forest Service. The State had 17 percent more timber volume in 1955 than in 1938, though the average size of trees was smaller and there was a larger percentage of hardwoods.

North Carolina now has 1,200,000 acres more forest land than it had 17 years ago.

Better Nursery Stock

A Minnesota Nursery Improves the Quality of Its Plants While Checking Erosion and Building Up Soil Fertility.

By LEONARD E. BULLARD and FRANCIS L. PAULSON

THE Bailey brothers, nurserymen, near St. Paul, Minn., have found that they can produce higher grade nursery stock by using the best soil- and water-conservation methods. Terraces, waterways, contour rows, crop rotations, fertilizing, cover crops, and green manure crops are among the soil conservation measures used.

"Since we established the soil- and water-conservation practices, we find that our nursery stock averages one grade better than before," Vincent Bailey stated. "More than a third of the stock is growing to the larger sizes. In 3 years we get growth that formerly took 4 years, and our tree survival has been better."

Vincent and his brother, Gordon, have operated the J. V. Bailey Nurseries in Washington

County since taking over from their father in 1943. They have more than 400 acres in nursery stock all the time, much of it with rolling, silt loam soils.

As every nurseryman knows, nursery production is rough on land; it means intensive land use. Most farmers think of corn or soybeans as soil depleting. From a soil-depleting standpoint, nursery planting is just as depleting as corn—only more so. The land is in cultivation almost continuously. There isn't much opportunity to put back fertility in the form of grasses and legumes. Constant cultivation lowers the land's resistance to the pounding of raindrops, and soil erosion naturally follows, particularly if the land has any slope at all. In addition, every time an evergreen is sold, a ball of soil goes with it, so that even without erosion, the topsoil is gradually depleted.

Note:—The authors are, respectively, area conservationist, St. Cloud, Minn., and work unit conservationist, Stillwater, Minn., Soil Conservation Service.



Nursery stock growing on terraced field of Bailey Nursery.

Soil erosion and declining fertility were becoming serious problems. The Baileys had been forced to abandon one 20-acre field because of severe sheet and gully erosion. This field had produced good stock for more than 15 years.

In 1945, they decided to do something about this problem and called on the supervisors of the Washington County Soil Conservation District. Soil Conservation Service technicians went over the farm with the Baileys. A soil survey was made that showed specifically what the soils were like and what they were best able to do.

The technicians and the Bailey brothers then worked up a conservation plan for the nursery land. They planned for terraces on the sloping land with grassed waterways for terrace outlets. New plantings were laid out on the contour. And crop rotations that included grass and legumes were worked out.

The contouring and terracing was a drastic change in the nursery operation. Before putting this part of the plan into operation, Vincent Bailey, who handles the field operations, and his field foreman, Carl Johnson, made a trip to Shenandoah, Iowa, to see how nursery operations with terraces and contouring, would work out. What they saw convinced Vincent the system was practical and that they could use it nicely on the Bailey Nurseries.

They built their first terraces, in 1946, doing



Vincent Bailey (left) and Gordon Bailey display a well-rooted specimen grown at their nursery.

the entire job with a breaking plow. A heavy rain gave them a good chance to see what they had accomplished just after these first terraces were finished. There was very little erosion on the terraced field. On a field right next to it gullies from 6- to 8-inches deep were gouged out by the heavy runoff.

The Baileys have built 20 miles of terraces since that first terracing job was completed in 1946. They have established and seeded about 1.5 miles of terrace-outlet waterways and an additional 1.6 miles of grass waterways in unterraced fields.

On one field that had a large raw gully they put in a concrete drop outlet. This structure drops the water 20 feet and protects the head of the gully from further cutting. Other drop structures are planned on two additional sites where gullies are threatening to damage a field road. At one of the structures a diversion dike was built wide enough to serve as a field road.

One of the most interesting features of the nursery-conservation plan is the crop rotation. The Bailey's decided on a 9-year rotation plan. For 6 years the land would be in nursery stock, followed by a crop of oats seeded to alfalfa and brome, that would be left in hay for 2 years. The oats and hay are harvested, except for a last cutting of alfalfa the second year. This growth is plowed under for green manure.

The 6 years of nursery crops consist of stock that is on the land for periods of 2 to 6 years. Very few 1-year crops are grown. The 5- and 6-year crops are mainly spruce and pine. The 2-, 3-, and 4-year crops are mostly ornamental shrubs, hardwoods, and fruit trees.

Commercial fertilizers are used if the plants show a need for it. Barnyard manure, at the rate of 40 tons per acre, is applied ahead of each nursery crop unless the crop is preceded by sod. Each year 25 acres of green manure crops, mostly sudangrass, are plowed under, and 40 acres of cover crops (mostly rye) are used. The Baileys are fortunate in being close to the south St. Paul stockyards, where they get their manure.

Vincent Bailey says that he is planning on trying an 8-year rotation of 1-year grain seeded to alfalfa brome, one year of hay, with all material to be chopped and left on the field, and then 6 years of nursery stock with heavy applications of manure.

Pipeline In The Sky

A New Mexico Rancher Solves a Water Problem by Suspending an 1,800-foot Pipeline High Over the Bed of a Deep Gorge.

By JAMES E. REEVES

JOHN S. EAVES, a rancher near Tularosa, N. Mex., had more than 5,000 acres in one of his pastures from which he could get little use because there was no water for the livestock. The only water in the entire pasture was a small seep spring in the face of a cliff high above the head of a deep, rocky gorge.

Previous owners had tried numerous devices to bring the water down from the cliff so it could be used by livestock. Each attempt proved futile, because flash floods soon undid their work.

Eaves figured that if he could get the water down to his pasture, he would have more than 5,000 additional acres that could be grazed by his cattle. He pondered the problem as he studied the washed-out efforts of previous owners. He considered the possibility of laying a pipeline along the hillsides, out of reach of damaging floods. However, the rocky cliffs and the necessity of crossing several side canyons convinced him that this would be impractical.

Then he hit upon another idea. If he could string a cable down the canyon from the spring, and fasten a pipeline to it, he could put the water where his cattle could use it.

After studying this plan carefully, Eaves sought advice from Soil Conservation Service technicians assisting the Otero Soil Conservation District, with which he is cooperating. The technicians studied his plan and agreed that it was practical and feasible. Following suggestions for a few minor changes in his original plan, Eaves and his two sons, John and James, went to work.

Using only hand tools, they dug holes on the points of four ridges that jugged out into the canyon. Heavy cedar posts 8 feet long were set in concrete in the holes to support the pipe and cable.

The seep spring was cleaned out, and a shelf dug out of the rock at the base of the spring on which was laid a 4-foot piece of perforated 4-inch pipe to serve as a collection gallery for the water. A 1-inch pipe reducer was put on the perforated pipe and nipple added for attaching plastic pipe.

U bolts and chains were concreted into holes drilled in the rock to serve as anchors for the cable. Flash floods, carrying huge boulders down the canyon, necessitated building a strong sloping roof of rock and concrete over the perforated pipe and the anchors for protection. An old slotted grader blade embedded in the roof let the water into the collection gallery.

A concrete dead-man anchor, with a heavy cable attached, was poured at the lower end of the canyon. Obtaining 1,800 feet of used $\frac{5}{8}$ -inch drilling cable, Mr. Eaves, with his farm tractor, pulled the cable up the canyon bottom to the spring. Using a block and tackle, the cable end was hoisted up to the U bolts near the spring,



John S. Eaves and son John look at their pipeline in the sky.

Note:—The author is work unit conservationist, Soil Conservation Service, Clouderoft, N. Mex.

where it was attached with cable clamps. With the help of block and tackle, the cable was hoisted up to each of the cedar-post supports on the ridges and threaded through cable blocks chained to the top of each post.

A heavy block and tackle was attached to the lower anchor cable and clamped to the suspension cable. Using a farm tractor and a pickup truck for power the cable was pulled up taut and clamped securely to the anchor. At each of the post supports, the blocks were taken off and the cable lashed tightly with chain.

The next problem was to string the 1-inch plastic pipe and fasten it to the cable. After stringing the pipe to the spring and clamping it to the outlet pipe, it was ready to be fastened to the cable with wire. Pieces of hose were used as shims to keep the wire and cable from wearing into the pipe.

A trolley, made from an old jeep seat, suspended on two sheave wheels was rigged up and Jim Eaves volunteered to ride the trolley and wire the pipe to the cable. "After the first span, if I didn't look down, it wasn't so bad," Jim commented. "Dad pulled me along and I tied the pipe on."

The pipe was strung in 4 spans—one span being over 600 feet long and some 60 feet above the canyon floor.

A storage trough for the water was moved



Jim Eaves on trolley, lashing plastic pipe to cable.



Stock water trough filled with water from completed pipeline on the Eaves ranch.

in, and it soon supplied water for the 50 head of cattle.

Mr. Eaves commented, "Even though this job took over 2 months to complete, it is well worth it. But my work isn't done yet, for this place needs a lot more work and careful management to bring back its grass and stop all these washes."

CONSERVATION AT TRAINING SCHOOL.—The State training school for the mentally handicapped at Parsons, Kans., teaches up-to-date farming methods, including soil and water conservation, to its students. The advanced training methods are showing results, not only in the wards and classrooms but also on the 500-acre farm of the school.

W. C. Baumgardner, farm supervisor, has been with the school since 1920. Last year he supervised the construction and seeding of a grass waterway and the construction of more than 10,000 feet of terraces. All construction was done with equipment owned by the school.

Soil Conservation Service technicians have helped develop a conservation plan for the farm and have furnished technical assistance in the layout of conservation practices.

Alfalfa and brome grass are the principal forage crops used in the conservation rotation. Around 200 acres are kept in alfalfa or alfalfa and brome. The forage is consumed by the 50 dairy cows of the school.

Large quantities of barnyard manure are applied to the land regularly. Commercial fertilizers and lime are also used, as soil tests indicate they are needed. The fertility level of the soil is well above the average for the community.

A modern milking barn with up-to-date equipment is used as one of the training laboratories for the school. All milk is used at the institution.

According to Dr. H. V. Blair, superintendent of the school, the training is designed to prepare students to return home with knowledge that will allow them to become self-supporting citizens.

—Melvin M. Thompson

GRASS & CATTLE IN BALANCE

Two Brothers in South Dakota Found That Most of Their Ranching Problems Disappeared When the Forage Crops and Cattle Were Kept in Balance.

By **LESLIE R. ALBEE**

"BALANCING livestock numbers with year around range forage and feed supplies has solved our major range problem. We have increased our calf weights 68 pounds in the past 6 years," declares Leo DeJong.

Leo and his brother, Bud, operate their 6,000-acre ranch on White River, 16 miles south of Kennebec, S. Dak.

Bud is the livestock man, while Leo is the grass man. They always consult one another before making important decisions on livestock and grazing management and feed production operations.

They favor Aberdeen-Angus cattle, although they acquired about 100 Hereford cows with the ranch in 1947. They also have some purebred Scottish Highlanders to compare their wintering characteristics with Angus and Herefords. Their long-time plan has been to sell the Herefords and cross Angus with Highlanders.

"I believe Angus cows with one-fourth Highland blood will winter better, and one-eighth Highlander calves will outproduce our straight Angus calves," Leo commented.

The topography of their ranch varies from flat river bottoms to abrupt, steep slopes and rolling uplands.

The DeJongs' ranges are well grassed with short, medium height, and tall grasses. Western wheatgrass and green needlegrass are their dominant cool season grasses. Their principal warm season grasses are big and little bluestem, blue and sideoats grama, prairie sandreed, sand dropseed, and buffalograss. This excellent combination of native grasses affords a long, green-grass period from early spring to early fall.

The DeJongs were running about 400 cattle in 1951. Their pastures were closely grazed, although the condition of their ranges averaged good. That is when they became cooperators with the Hamil Soil Conservation District.

"At that time we were overstocked and short of early spring pasture and hay. We decided to move about half of our cows onto rented range for 4 months, the first 2 years," Leo stated.

Relieving the spring pressure on summer ranges by grazing 150 cows on outside pasture, in 1951 and 1952, was the starting point of the DeJong's range-improvement program. The native grasses responded to the lighter spring grazing. The taller grasses increased at the expense of the shorter, less productive ones. Extra grass mulched the soil so that more moisture soaked in. More grass was produced per acre, as stored soil moisture increased. Less runoff and soil loss resulted. Range condition improved.

The second step was to seed nearly 300 acres of cropland to alfalfa, crested, and intermediate wheatgrasses, and smooth brome for hay. Previously, their only hayland was 80 acres of native grass that was flooded by their water-spreading system.

A good stand of alfalfa and grass was established, followed by an outstanding alfalfa seed crop in 1952. A range field tour was held on the DeJong ranch the following summer. "We made more money on alfalfa seed that year than we've ever made by farming. We had a good hay crop, too," Bud declared.



Bud (left) and Leo DeJong with some of their calves on winter feed.

Note:—The author is range conservationist, Soil Conservation Service, Rapid City, S. Dak.

"Our water-spreading system on 80 acres has more than doubled the production of native western wheatgrass and green needlegrass hay," Leo reported.

"Recently we built a series of earth dams on the draw above our spreader system to reduce the silt flow. Our neighbor up the draw started with several of these dams, so we tied in with his. Last year was the first time we've had clear water spread over our native hayland.

"We pump water from White River, on our alfalfa, to supplement rainfall and runoff water," Leo continued. "Extra water on these haylands provides us with the hay we need to carry us through hard winters.

"One year we shipped 100 tons of alfalfa to Missouri at more than \$20 a ton. We shouldn't have sold it. It was the first and last hay we've ever sold. If hay is worth \$20 a ton in Kennebec, it's worth that much to us right here on the ranch," Leo added, with emphasis.

Cross-fencing, in their 2,350-acre summer and 1,800-acre winter pastures, has improved grazing management. "It helps both the grass and cattle to have fresh pastures to move onto as the grazing season progresses. We have built needed stock water ponds in each pasture, too," the DeJongs pointed out.

They changed their cow-calf operation to a cow-calf-yearling steer basis. They reduced the breeding herd from 300 to less than 225 cows

by selling the Hereford cows and culling their Angus herd. They sell their heavy Angus calves for top prices and buy light, well-bred calves to run until they are long yearlings.

"In 1956, our calves weighed 468 pounds as compared to 400 pounds or less before we improved our ranges. The calves were so uniform and heavy that we sold them all last fall for 24 cents," Bud said.

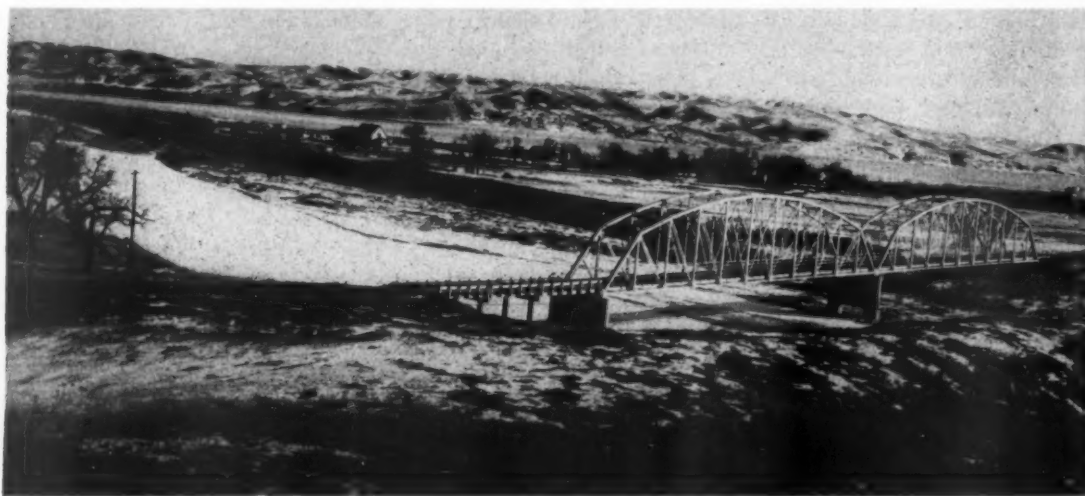
"We buy good weaner calves at about 350 pounds. We usually buy about 150 to 250 calves each fall, depending upon range condition. We prefer Hereford-Angus crossbred calves. We plan to put about 400 pounds of weight on them."

Leo added, "We put winter gain on these light calves by feeding them alfalfa, ground corn, and oats."

"These yearling steers gain quickly in the spring and summer on good grass. They will weigh nearly 750 pounds by fall.

"This winter we have 350 acres of windrowed hay for our cowherd. By mowing, when the protein content is 6 to 9 percent, we can save protein for winter use. At \$80 or more a ton for cake, we prefer to grow our own protein in alfalfa and grass hay.

"We have caked heavily in the past, but in the present price-cost squeeze, it is much cheaper to grow our own protein," the DeJongs agreed.



The DeJong ranch on the White River, S. Dak.

"If extended drought hits our ranges, we plan to sell our steers so we can maintain our cowherd intact. We think we can keep our 200 to 225 cows through a severe drought without having to reduce our herd," they observed.

The DeJong ranch is well-balanced between livestock numbers, hay, and other harvested roughages and native grass.

"Now we can surely breathe easier than we could back in 1951. Our range problems have nearly all disappeared. Our calf weights have increased. We have improved our rangelands and balanced our livestock forage and feed supplies. And, we've made money doing it", concluded the DeJong brothers.

The Ladies Take Over

Ladies Auxiliaries of Two Soil Conservation Districts in Oklahoma Assume Responsibility for Educational Activities

By CHARLIE KILPATRICK and
A. P. OTTINGER

THE ladies auxiliaries are taking over more and more of the educational activities of soil conservation districts in Oklahoma. Two of the more active auxiliaries of the State are those of the Upper Washita and Caney Valley Districts.

The Caney Valley Auxiliary only came into existence in February 1956. It has already assumed responsibility for practically all educational work of the district, and has branched out into State and national activities. The group works closely with the county superintendent and teachers organizations to get more and better conservation taught in the schools. They help sponsor speaking, essay, and poster contests for 4-H and FFA members. One of their pet projects is sponsoring Soil Stewardship Week for the district.

One of the first jobs taken on by the auxiliary was acting as hostesses and tour guides during



Charlie Kilpatrick discusses soil profiles with members of the Ladies Auxiliary of the Caney Valley District.

"Open House for Double Creek Pilot Project" where more than 400 farmers and ranchers observed detention dams and land-treatment measures applied for upstream flood prevention. Women were assigned to each of the 11 school busses to hand out brochures and to serve as tour guides for the 20-mile trip through the area.

During the national meeting of the Soil Conservation Society of America at Tulsa, auxiliary members were present at the Caney Valley Soil Conservation District booth to tell the story of the Double Creek upstream flood-prevention project. Similar services are rendered annually during the Washington County Fair.

A program is given each year before the Bartlesville Lions Club. This includes an elimination speaking contest for district cooperators to select members that will represent the district in the area and the statewide contests.

One of the outstanding achievements of this auxiliary was in getting the home demonstration council to ask home demonstration clubs to set aside their April meeting to study conservation, and the July meeting to study farm legislation, especially P. L. 566.

A portion of each monthly meeting of the auxiliary is given over to a study of current problems, which so far has included soils, range sites and conditions, identification and evaluation of range plants, upstream flood prevention, legislation affecting soil and water conservation, goals and objectives, etc. Auxiliary members schedule neighborhood group meetings and arrange for twilight tours followed by a basket

Note:—The authors are work unit conservationists, Soil Conservation Service, at Bartlesville and Clinton, Okla., respectively.



Mrs. Ray Stucker (left) and Mrs. Curtis Murphy, of the Upper Washita District, look at prize winning posters from the contest sponsored by the ladies auxiliary of the district.

supper. Officers of the auxiliary attend the regular monthly board meetings of supervisors, and make reports and offer assistance. Each auxiliary member is able to explain and discuss the district's operation and philosophy.

The Upper Washita Auxiliary is also very active in sponsoring all types of conservation education throughout the 2 counties included in the district. One of their recent and outstanding projects was sponsorship of a poster contest among grade schoolchildren. More than 1,500 posters were submitted by the children. Every school in the 2 counties was represented. Two or 3 members of the auxiliary worked with the children at each school, giving suggestions and supplying them with appropriate materials. The contest was divided into 3 sections; one for 3rd and 4th graders, one for 5th and 6th graders, and the other for 7th and 8th grade students. The 36 top contestants were invited to a special banquet and given cash awards.

A Subscription to This Magazine Should Make a Good Contest Prize or Christmas Gift.

A Challenge Is Met

A Soil Conservation District Hires Its Own Personnel to Make Topographic Surveys for Irrigation Planning.

By HERMAN V. SCHULTZ

IN 1954, irrigation was spreading like an early-day prairie fire in York County, Nebr. This was made possible by the installation of deep wells on individual farms. Requests for technical assistance from farmer-cooperators were growing in number every day. The requests were mainly for complete conservation-irrigation plans. This was the problem confronting the York County Soil Conservation District board of supervisors.

By the end of 1954, more than 100 requests for assistance were on file. Evan Miller, chairman of the board of supervisors, called a special meeting inviting all interested cooperators and prospective cooperators to attend. This interested group was informed that it would be a year or more before the technical staff, assigned to the York District by the Soil Conservation Service, could process the applications on hand. By then there would be double or triple that number of additional requests.

One of the time consuming jobs that slowed down the conservation irrigation planning work of SCS technicians was the making of topographic surveys. Soil conservation surveys had been completed for most of the county. But accurate topographic surveys were also needed for laying out irrigation systems.

It was decided at this meeting that the district would employ personnel to assist in making topographic surveys and would buy its own transit and other surveying equipment. In order to pay the personnel and buy the equipment, the district would charge each cooperator 30¢ per acre for making a topographical survey

Note:—The author is work unit conservationist, Soil Conservation Service, York, Nebr.

map of his farm. The district agreed to furnish an instrument man and a note keeper. The cooperator was to furnish a minimum of three walkers to serve as rodmen in carrying the stadia boards. Shots would be taken every 100 feet by stadia azimuth. The 30¢ per acre charge would also include cost of district help to reduce the field notes and plot the "topog" maps. The 30¢ per acre charge was only for hiring district employees and purchasing necessary equipment to get the job done. None of the money was used for SCS personnel or equipment.

The York County Soil Conservation District was organized in 1946. Eighty-five irrigation wells were in operation at that time. Engineering help and layout had been confined to that which could be provided by the county agent and his staff. The average deep well will irrigate about 90 to 100 acres.

From 1946-52, 85 more deep wells were installed; an average of about 12 wells per year. This permitted the Soil Conservation Service personnel to keep up with the district workload, including the making of topographic surveys.

Drought started in 1952. Thirty-two wells were installed in 1953, and 83 in 1954. The stampede was on. It seemed as if every landowner and operator in the county had suddenly decided to be an irrigator. That was when the district board decided to hire district personnel to help the SCS technicians.



Merle Kaeding (left) and Art Klute, district employees, complete their notes on topographic surveys made during the day.

Under the new plan of operations, personnel had to be trained for the district-operated crews. This was done by the assigned technical staff of SCS. Work for cooperators was scheduled a week in advance. One or two survey crews worked every day the weather permitted except for June, July, and August. The district's report for 1955 indicates the success of this procedure—19,500 acres had been surveyed. This compared to 19,300 acres for all previous years.

Dry weather extended on through 1956. In fact it was so dry that most farmers disked their cornstalks down so they could survey their fields through the summer months. Applications for assistance kept coming. The district's report of 1956, showed 27,100 acres had been surveyed, maps plotted, and reproductions made for the cooperators. This brought the total acres surveyed to 65,900.

During the 2 years, 1955-56, 500 cooperators were serviced. There are approximately 2,000 operating units in York County. There were many group meetings as each cooperator would call in 1, 2, or 3 neighbors to help with the survey. Art Klute, chief of party for the district says, "Seldom do we survey a farm now when at least 1 or 2 of the farmers haven't helped before."

All requests were processed by the end of 1956. Irrigation wells in the county increased from 285 to 400 by the end of 1955. At the end of 1956, they had more than doubled, totaling 816.



The board of supervisors of the York County Soil Conservation District.



In spite of this tremendous increase, the technical staff of the Soil Conservation Service was able to complete a conservation plan for irrigation at the time the cooperator received his "topog" map. This enabled him to choose the most suitable location for his well, type of system most suitable (gravity ditch or gated pipe), row direction, length of run, crop rotation, and the conservation practices needed to protect the irrigation system from surrounding areas. It has permitted the district dryland program to be carried out without interruption. The technical staff has been able to give assistance on the farm for such irrigation practices as land leveling, surveying ditch laterals, and drop structures.

This indicates the tremendous service district supervisors are giving their cooperators by providing leadership and using district resources to promote conservation when and where it is wanted.

CONSERVATION CONTRACTORS.—For the past 10 years the Middlesex Soil Conservation District in Massachusetts has held an annual dinner meeting with heavy equipment contractors. The first few years the district supervisors were mainly interested in getting qualified contractors to do conservation work.

This objective was accomplished with such success that contractors in the area are now helping the district sell farmers on conservation practices. Contractors not only sell farmers on conservation, but also help convince farmers that they should become district cooperators and secure the assistance of Soil Conservation Service technicians.

The district now has about 10 contractors who are highly skilled in soil- and water-conservation jobs, and at least another 10 who are anxious to get into this select group.

At these district-contractor dinner meetings, during the past few years, the topic of conversation has centered around ways and means of doing a better job. The contractors offer suggestions to the district supervisors and SCS technicians. The district supervisors and

SCS technicians offer suggestions to the contractors. There is a general air of friendly cooperation at the meetings. All parties concerned have one aim in mind; to get more and better conservation on the land.

A typical soil and water conservation contractors meeting consists of about 30 contractors, the district supervisors, SCS personnel, county agent, and ACP county office manager. After dinner, from 7 to 8 P.M., a panel of district supervisors, contractors, county agent, ACP office manager, and SCS technicians answer questions. After the panel discussion contractors sign contracts and everyone visits.

In the field, a typical contractor will follow designs and specifications with a minimum amount of waste motion. He knows what stakes and cut marks mean. He explains to farmers why it is necessary to have a 2 to 1 slope when the specifications call for a 2 to 1 slope. Many of these contractors have now become so skilled at following SCS instructions that little supervision is necessary. It is the general feeling of all concerned that this skill and cooperation in establishing conservation practices is due to the understanding brought about by annual dinner meetings.

—CARL O. CLARK

STRIP MINE RECLAMATION.—The Kentucky Reclamation Association was formed in 1948 by strip mine operators of the State who felt a responsibility to the public to put back into use lands stripped for coal. The primary purpose of the association is stated: "To rejuvenate lands laid waste by strip mining operations."

LOOKING AHEAD, I can visualize thousands of our small watersheds in the condition that God intended them to be: hillsides guarded with a mantle of trees and grass . . . land on the lower slopes and in the valleys protected by other conservation practices that save soil and hold back the water . . . upstream dams, supplementing land treatment, to hold back water when we have too much, and release it when we have too little . . . land in watersheds revitalized; water more plentiful . . . man and nature in harmony!

—EZRA TAFT BENSON
Secretary of Agriculture